CHAPTER 3. EXISTING CONDITIONS

The existing environment for the study area is described in this chapter in terms of riparian-wetlands, fisheries, wildlife, and threatened and endangered species. Where applicable, descriptions of the geomorphology and hydrology of the river valley are related to the presence of riparian-wetland conditions. Similarly, descriptions of the geomorphology and hydrology of the river channel are related to fish habitat.

For many resources, environmental conditions are similar throughout the study area, especially those conditions within each river segment. Within each river segment, conditions tend to vary the most by property ownership and appear to be most reflective of both past and current land uses. An overview of existing conditions common throughout the study area for each resource is summarized in the General Findings section of Chapter 3. This overview includes resource discussions by river segments and reaches. Site-specific conditions are summarized separately in this chapter for each property within the study area. Methods used to assess resource conditions for riparian wetlands, fisheries and hydrology/geomorphology are described in the technical appendices that are attached to this report.

3.1. GENERAL FINDINGS

3.1.1 Riparian-Wetlands

The overall approach to conducting riparian-wetland analyses closely integrated the evaluation of riparian-wetland vegetation with geomorphology, hydrology, and land use. The river corridor has several geomorphic surfaces within the confines of the valley walls that are the products of fluvial depositional and erosional processes. These surfaces create a mosaic of land patterns on the valley floor that provide a physical template both of disturbance processes and water availability that are requisite for the development of riparian-wetland plant communities (Gregory et al. 1991). In the arid and semi-arid regions of the southwestern United States, riparian-wetland areas are vegetationally distinct from upland areas because rivers and streams provide additional sources of water in an otherwise water-limited environment (Fisher 1995). With increasing distance from the river and/or elevation above the alluvial water table, the fluvial surfaces become drier and there is a transition from the riparian-wetland ecosystem to the upland ecosystem. Therefore, because riparian-wetland plant associations may be related to specific valley landforms and fluvial surfaces, it generally should be possible to predict the vegetation potential of such surfaces even if they have been perturbed by human land uses (Kovalchik and Chitwood 1990).

The fluvial surfaces of the La Plata River valley were differentiated based on their affinity for supporting riparian-wetland conditions. The *zone of influence* is defined as that area within the river valley that is influenced by the river's hydrology—both surface water and ground water. Typically, the zone of influence supports riparian-wetland plant communities that are dependent

on the hydrology and geomorphic processes of the river. Within the study area, three surfaces were identified within the river's zone of influence: (1) the channel-bar subzone, (2) the floodplain subzone, and (3) the low terrace subzone. One surface, the high terrace-alluvial fan, was designated outside the zone of influence (Figure 3-1).

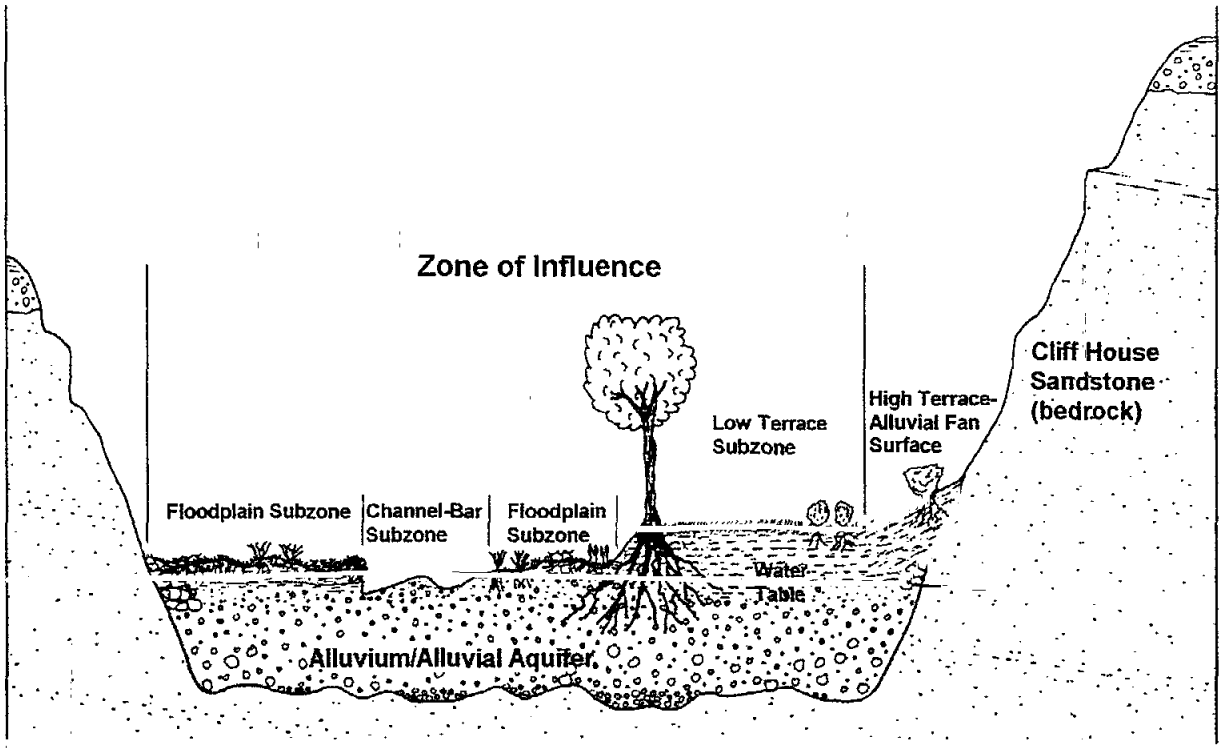


Figure 3-1. —Cross-section of La Plata River valley bottom.

The area of most active fluvial processes is herein termed the *channel-bar subzone* (Figure 3-1). This subzone incorporates the river channel and generally encompasses a band of recently deposited sediment on either one or both riverbanks. This subzone is subject to frequent flooding and is prone to rapid erosion and/or deposition. Its surface is located within one to two feet of normal flow level and depth-to-ground water is typically shallow. Plant communities in the channel subzone are those that are water tolerant and whose recruitment requires a bare-sediment nursery condition. Dominant plant species include narrowleaf cottonwood (*Populus angustifolia*), sandbar willow (*Salix exigua*), and tamarisk (*Tamarix ramosissima*). Seedling recruitment of these species appears to occur on an annual basis, but mortality is high due to scouring flood flows and/or livestock depredation. Nevertheless, multiple classes of seedling-sized cottonwoods, willows, and tamarisk (1-6 years) were observed within this subzone throughout the study area. Although livestock grazing suppresses these communities from reaching their full potential (Figure 3-2), the degree of suppression can vary greatly among the

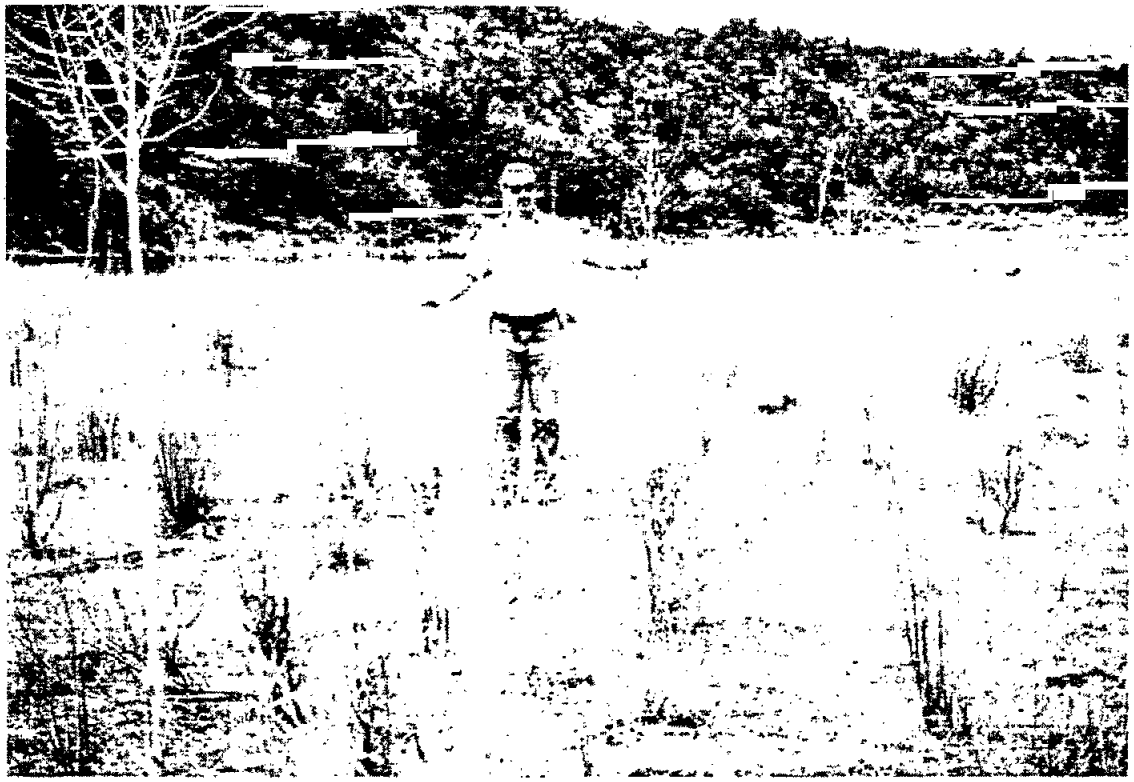


Figure 3-2. —Example of grazing restricting the height of young cottonwoods. Note height of less-grazed tree of same size class in foreground.

parcels within the study area. Frequent deposition and scouring of substrates limit the establishment of herbaceous plant communities.

Located about 2-feet above the channel is the *floodplain subzone* (Figure 3-1). This is a predominantly depositional environment, with clays, silts, and sands acreted from suspension during flooding. A lesser flood frequency on a surface with a relatively shallow ground-water table allows for the establishment of herbaceous vegetation. Plant communities of the floodplain subzone include wet meadows of riparian sedges (*Carex spp.*), arctic rush (*Juncus arcticus*), grasses (*Agrostis spp., Hordeum jubatum,* and *Poa spp.*) and various forbs. Marshes of bulrush (*Scirpus spp.*), spike rush (*Eleocharis spp.*) and cattail (*Typha lattifolia*) occur in oxbow meander scars and chute channels where the ground-water table intersects the floodplain. Cottonwood, willow, and tamarisk communities are also present; although, their recruitment is probably limited, occurring mainly on sandy sediment deposited near riverbanks or in chute channels after moderately large floods.

Located 3- to 6-feet above floodplain level is the *low terrace subzone* (Figure 3-1). This subzone may have been the floodplain prior to turn-of-the century channel incision that resulted in the modern-day floodplain. Presently, the terrace subzone is rarely flooded. Hydrological reductions in surface and ground water from upstream diversions, lack of overbank flooding, and greater height above the ground-water table make this a drier microenvironment within the zone of

influence. Upland grass/forb and sagebrush are the prevalent plant communities on the terrace subzone. However, very old and deep-rooted cottonwood trees survive on this terrace because their roots extend to the ground-water table. Apparently, these trees were recruited around the turn of the 20th Century when this subzone was the river's floodplain or when it was overtopped by large flood flows. The understories of these cottonwoods lack other herbaceous and shrubby riparian-wetland plants and are dominated by upland grasses, forbs, and mature sagebrush. This subzone may support cottonwood, tamarisk, Russian Olive, willow, and/or riparian grass/forbs communities where moisture levels are elevated by irrigation returns or tributary inflows which raise the local ground-water table.

Between the valley wall and the low terrace subzone are two surfaces not included within the zone of influence. These surfaces have been combined into the *high terrace-alluvial fan* (Figure 3-1). These surfaces are about 6-feet higher in elevation than the low terrace subzone. Because of their greater elevation above the river, these surfaces are unaffected by present-day river processes and hydrology. Typical plant communities are scrub oak, upland grass/forb, and sagebrush. Riparian-wetland vegetation may occur where non-river water sources raise the local ground-water table.

Within the study area, a total of approximately 405 acres of plant communities and cover types were delineated within the river's zone of influence. (See Appendix B for a detailed description of plant community types and how they were identified and mapped.) Of this total, approximately 238 acres occur in Segment I (Table 3-1, Figure 3-3). Segment I contains about twice as much channel-bar subzone than floodplain subzone and has the greatest extent of low terrace subzone. This is reflected by the presence of approximately 49 acres of the cottonwood, Russian olive, tamarisk, 40 acres of the willow community type and 45 acres of the riparian grass/forb type. The shrub community types are strongly correlated with the channel-bar subzone and the riparian grass/forb with the floodplain subzone. Approximately 40 acres of desert grassland/shrubland and 32 acres of the upland grass/forb, which are correlated with the low terrace subzone, are present in Segment I.

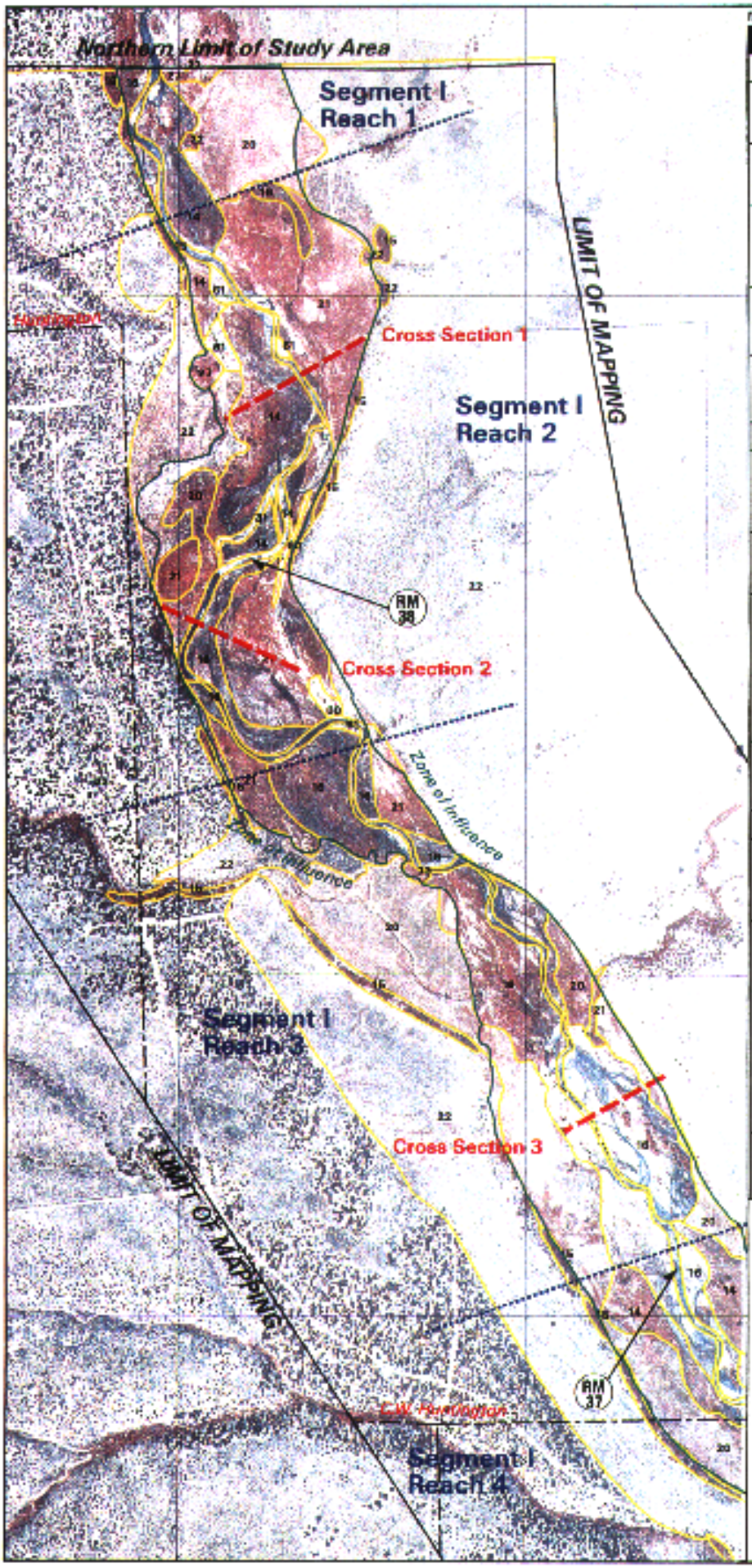
Cottonwood and willow recruitment were observed throughout Segment I, although livestock grazing appears to prevent the full development of these communities. Similarly, livestock grazing prevents both the riparian and upland grass/forb communities from reaching their full potential. The presence of Kentucky bluegrass, alfalfa and red clover in the riparian/grass forb communities suggests that there were attempts to convert these areas to livestock pasture. Tamarisks are present, but are not problematic because they do not form dense, monoculture thickets. Additionally, the removal of mature tamarisk clumps for livestock pasture appears to have helped keep this undesirable species in check. In general, the effects of livestock grazing and the presence of tamarisk are similar in Segments II and III.

Table 3-1. —Summary of Plant Communities and cover classes within the La Plata River's zone of influence.

Vegetation Class		Segment I	Segment II	Segment III	TOTALS
10	Russian Olive and/or Tamarisk [1]	0	1	8	9
11	Pinyon / Juniper	1	0	2	3
12	Conifer / Oak	0	0	0	0
13	Cottonwood [1]	1	0	3	4
14	Cottonwood, Russian Olive, Tamarisk [1]	49	36	25	110
15	Oak	1	1	4	6
16	Willow [1]	40	6	2	48
20	Grass / Forb Upland	32	19	8	59
21	Grass / Forb Riparian [1]	45	8	0	53
22	Desert Grassland / Sagebrush	40	7	12	59
23	Emergent Wetlands [1]	6	3	1	10
27	Sagebrush / Cottonwood	4	1	2	7
30	River [1]	13	6	6	25
31	Side Channels / Back Water	1	0	0	1
40	Residential, Industrial, and Roads	0	0	3	3
50	Irrigated Farmlands, Pasture / Grazing	0	0	0	0
60	Bareground / Weeds	1	0	0	1
61	Gravel, Sand, and Mud Bars [1]	4	1	2	7
TOTALS		238	89	78	405

[1] Riparian-wetland classes

A total of approximately 89 acres of plant communities and cover types occur within the zone of influence in Segment II (Table 3-1, Figure 3-3). The upper portion of Segment II has several large alluvial fans. The dominant plant community in the upper portion is the upland grass/forb type (19 acres), which occurs on the terrace and high-terrace/alluvial fan subzones associated with these fans. Riparian-wetland vegetation is limited to the narrow channel-bar and floodplain subzones. In the lower portion of Segment II where the channel-bar subzone is most prevalent, cottonwood, tamarisk, Russian olive and willow communities are most common (36 acres).



MAP 1: Descriptive Legend Text Here

RESOURCE	DESCRIPTION
SEGMENT 1, REACH 1	
Hydrology/ Geomorphology	• Q 1.5 = 400 cfs • Low to moderate bank erosion
Vegetation	• 11ac [illegible] within zone of influence • Morris Creek Fen (2.0 ac.)
Fish	• Good habitat for specified taxa: bluehead sucker • Riffle/run and cobble-gravel riffles, low pools, low bank overhangs
Wildlife	• Moderate habitat values
T & E Species	• [illegible] SW Flycatcher habitat • No Bald Eagle roosts
SEGMENT 1, REACH 2	
Hydrology/ Geomorphology	• Q 1.5 = 400 cfs • Low to moderate bank erosion • Fair channel stability • Large expanse of channel bar and floodplain surfaces
Vegetation	• 47 ac. total • 21 ac. of perennial grass/forb riparian (R2*)
Fish	• Fair habitat for specified taxa, bluehead sucker • Braided, cobble-gravel riffles, low [illegible] low [illegible] overhangs
Wildlife	• Moderate habitat values
T & E Species	• Limited SW Flycatcher habitat • Bald Eagle roosts
SEGMENT 1, REACH 3	
Hydrology/ Geomorphology	• Q 1.5 = 400 cfs • Low to moderate bank erosion • Fair channel stability • Large alluvial fan and braided reach
Vegetation	• 39 ac. total • 22 ac. in trees (R1*) • 16 ac. Grass/forb uplands (R2)
Fish	• Fair habitat for specified taxa, bluehead sucker • Riffle/run, open riffles, low pools, no bank overhangs
Wildlife	• Moderate habitat values
T & E Species	• Potential SW Flycatcher habitat • No Bald Eagle roosts

Legend:

*10	Russian Olive and/or Tamarisk
11	Pinyon/Juniper
12	Conifer/Oak
*13	Cottonwood
*14	Cottonwood, Russian Olive, Tamarisk
15	Oak
*16	Willow
20	Grass/Forb Upland
*21	Grass/Forb Riparian
22	Desert Grassland/Sagebrush
*23	Emergent Wetlands
27	Aspen/oak/Cottonwood
*30	River
*31	Side Channels/Back Water
40	Residential, Industrial, and Roads
50	Irrigated Farmlands, Pasture/Grazing
60	Revegetated/Weeds
*61	Gravel, Sand, and Mud Bars

* Riparian wetland classes

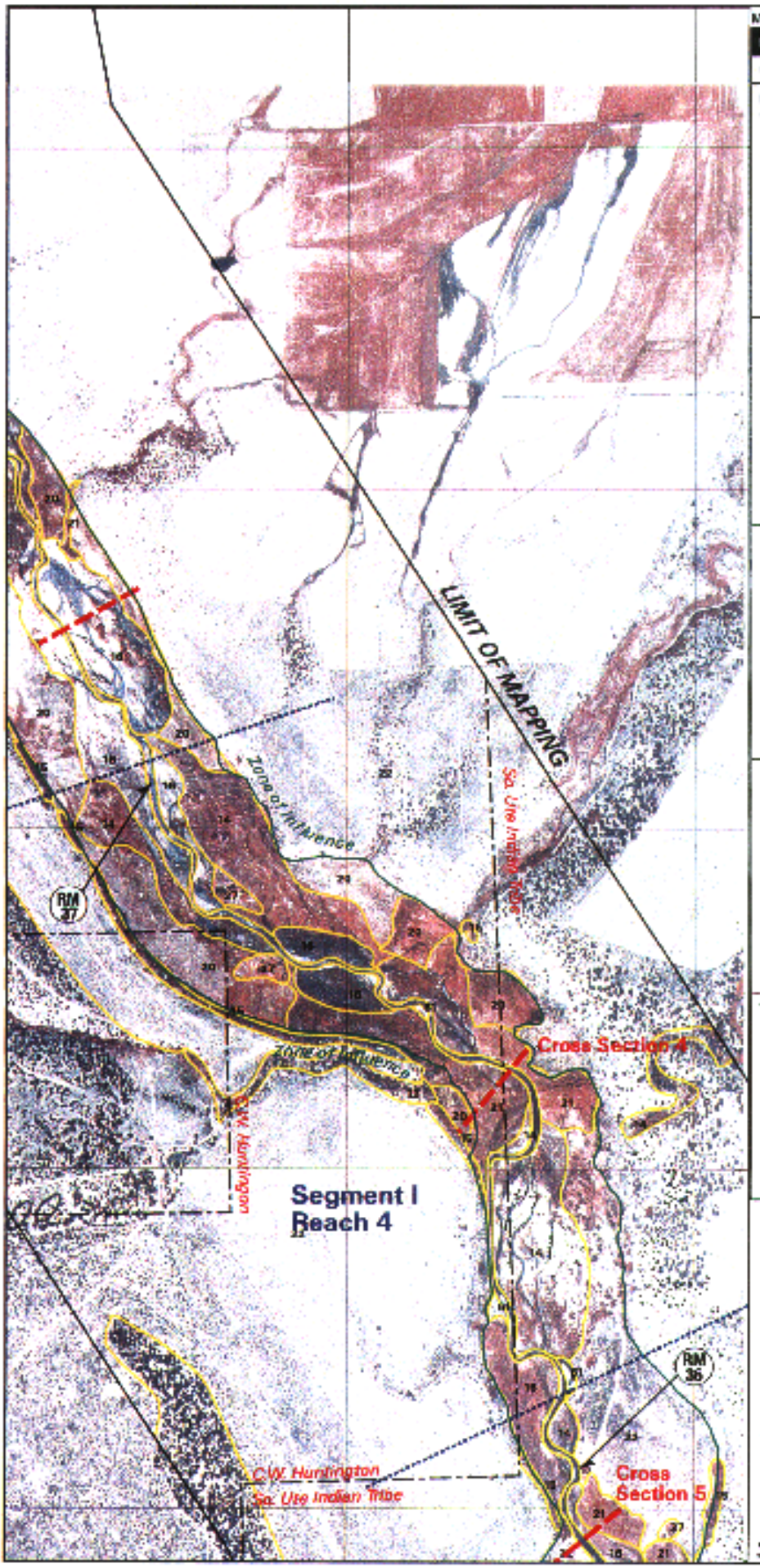
North

1 Inch = 500 Feet

0 250 500 1000 1500

Figure 3-3.—Existing conditions, Map 1.

REDUCED FROM ORIGINAL SIZE



MAP 2: Descriptive Legend Text Here

RESOURCE	DESCRIPTION
SEGMENT I, REACH 4	
Hydrology/ Geomorphology	• Q 1.5 - 400 cfs • Low bank erosion • Fair channel stability • Channel braiding of [illegible] lower ends of reach
Vegetation	• 12 ac. Class #1 • 18.5 ac. Class #14 • 11 ac. conversion grass to riparian [#21] • 12 ac. Class #20 • 5.5 ac. Class #22 • [illegible] ac. of Iowa (FWS)
Fish	• Good habitat for cutthroat trout, brassback sucker • Swift run, some deep pools, gravel riffles • Short section with boulders, debris/overhangs, cool shelter • Good overall fish habitat always check with [illegible]
Wildlife	• Moderate habitat value
T & E Species	• Potential SW Flycatcher habitat • Bald Eagle roost site

Legend:

- *10 Russian Olive and/or Tamarisk
- 11 Pinyon/Juniper
- 12 Conifer/Oak
- *13 Cottonwood
- *14 Cottonwood, Russian Olive, Tamarisk
- 15 Oak
- *16 Willow
- 20 Grass/Forb Upland
- *21 Grass/Forb Riparian
- 22 Desert Shrub/Upland Scrub
- *23 Emergent Wetlands
- 27 Sagebrush/Cottonwood
- *30 River
- *31 Side Channel/Slack Water
- 60 Residential, Industrial, and Roads
- 65 Irrigated Farmlands, Pasture/Grazing
- 80 Campground/Waste
- *81 Gravel, Sand, and Mud Bars

* Riparian wetland classes

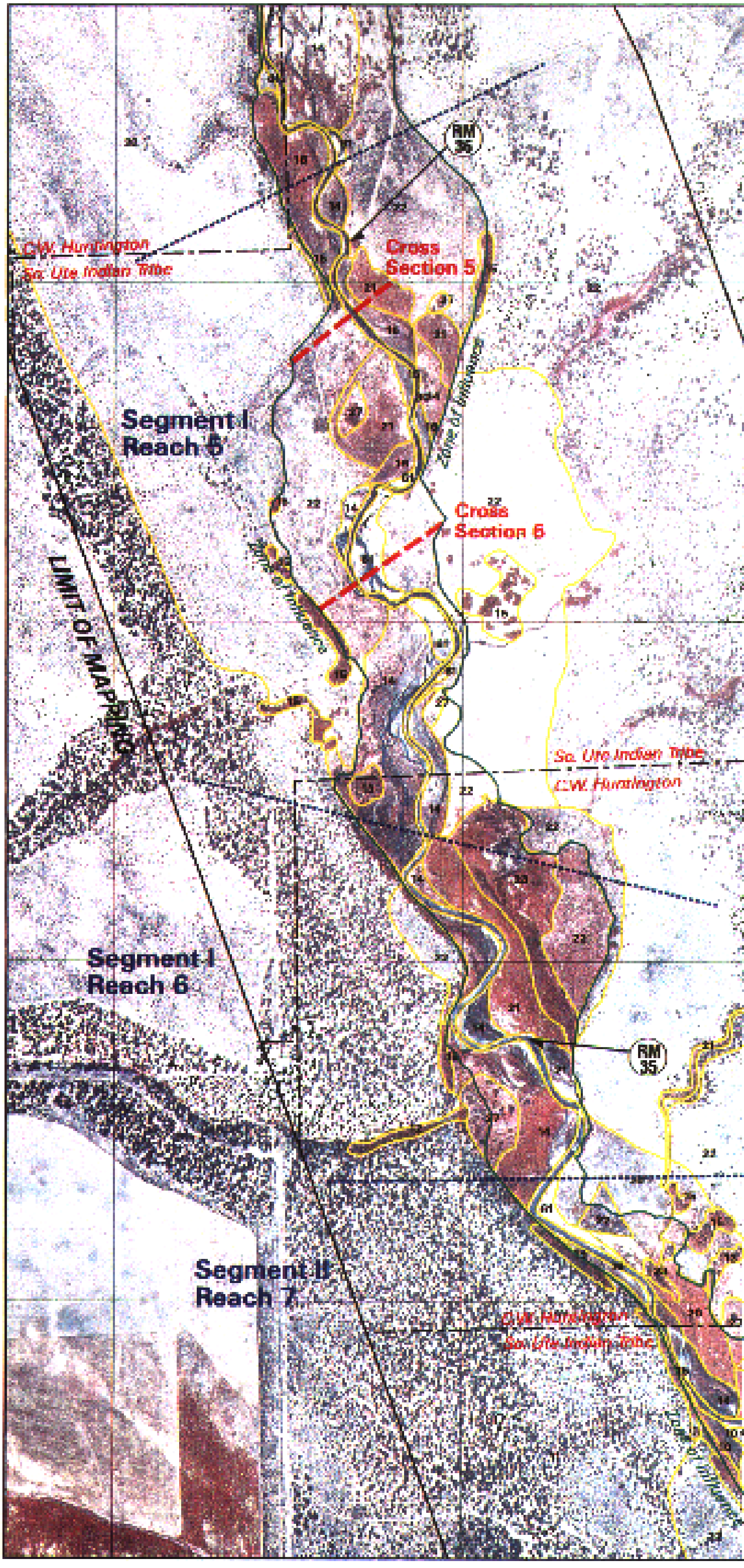
North

1 inch = 1000 feet.

ECOWEST, Inc.
August 1997

Figure 3-3. Existing conditions, Map 2.

REDUCED FROM ORIGINAL SIZE



MAP 3: Descriptive Legend Text Here

RESOURCE	DESCRIPTION
SEGMENT I, REACH 5	
Hydrology/ Geomorphology	• Q 1.5 = 400 cfs • Moderate bank erosion • Fair channel stability • Large expanse of low terrace and alluvial fan
Vegetation	• [illegible] ac. total • [illegible] ac. Class #22, [illegible] ac. Class #14 • 6 ac. converted grass/forb riparian (#21) • High grazing pressure
Fish	• Fair habitat for speckled dace, bluehead sucker • Shallow, open riffles, few pools, no bank overhang
Wildlife	• Low to moderate habitat value
T & E Species	• Limited SW Flycatcher habitat • No Bald Eagle roosts
SEGMENT I, REACH 6	
Hydrology/ Geomorphology	• Q 1.5 = 400 cfs • Moderate to high bank erosion • Fair to good channel stability • Large floodplain expanse, narrow channel bar subzone
Vegetation	• 23.5 ac. total • Mostly Class #14 (7.5 ac.) • 5 ac. converted grass/forb riparian (#21) • 4 ac. emergent wetland complex
Fish	• Good habitat for speckled dace, bluehead sucker • Swift runs, some deep pools, gravel riffles, few bank overhangs
Wildlife	• Low to moderate habitat values
T & E Species	• Limited SW Flycatcher habitat • Bald Eagle roost site

Legend:

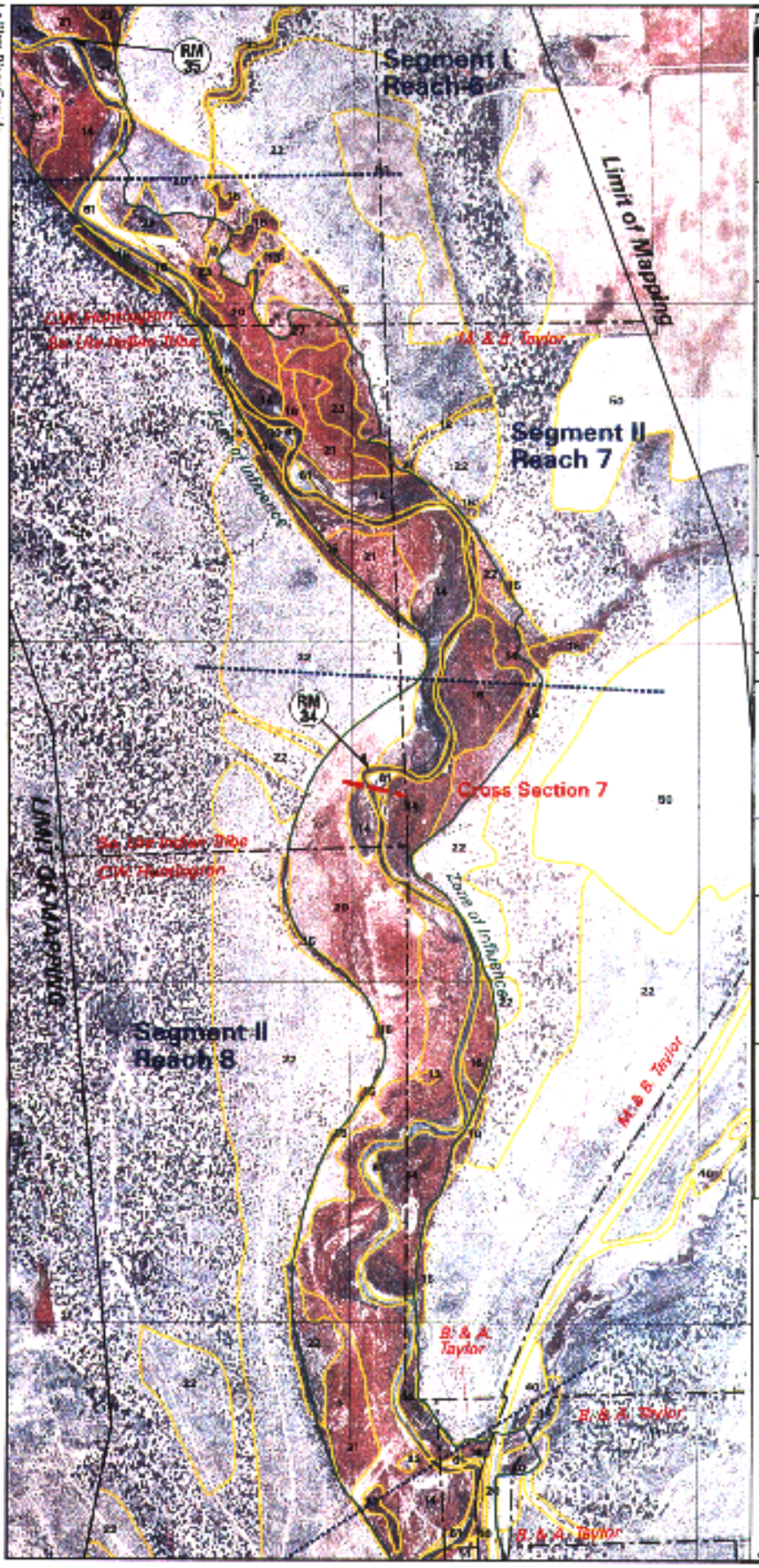
*10 Russian Olive and/or Tamarisk
11 Pinyon/Juniper
12 Conifer/Oak
*13 Cottonwood
*14 Cottonwood, Russian Olive, Tamarisk
15 Oak
*16 Willow
20 Grass/Forb Upland
*21 Grass/Forb Riparian
22 Desert Grassland/Sagebrush
*23 Emergent Wetlands
27 Sagebrush/Cottonwood
*30 River
*31 Side Channels/Back Water
40 Residential, Industrial, and Roads
50 Irrigated Farmlands, Pasture/Grazing
60 Bareground/Weeds
*61 Gravel, Sand, and Mud Bars

* Riparian wetland classes

North
1 inch = 500 feet
0 200 400 600 800 1000

Figure 3-3. Existing conditions, Map 3.

REDUCED FROM ORIGINAL SIZE



MAP 4: Descriptive Legend Text Here

RESOURCE	DESCRIPTION
SEGMENT II, REACH 7	
Hydrology/ Geomorphology	• Q 1.5 = 420 cfs • Moderate bank erosion • Poor to good channel stability • Large alluvial fan and floodplain surface
Vegetation	• 50 ac. total • Mostly Class #14 (30 ac.) • 4 ac. conversion grass/forb riparian (80%)
Fish	• Good habitat for speckled dace, bluehead sucker, fair to flannelmouth sucker • Short section of good habitat for roundtail chub • Numerous deep pools, abundant gravel riffles • Native roundtail chub and flannelmouth sucker were observed in the reach
Wildlife	• Low to moderate habitat value
T & E Species	• 4 W. Yellow-Billed Cuckoos observed • Bald Eagle roost site
SEGMENT II, REACH 8	
Hydrology/ Geomorphology	• Q 1.5 = 420 cfs • Low to high bank erosion • Poor to good channel stability • Large expanses of low to good, floodplain, and channel fan surfaces
Vegetation	• 55 ac. total • Mostly Class #14 (25 ac.) and Class #20 (15 ac.)
Fish	• Fair habitat for speckled dace, bluehead sucker, flannelmouth sucker • Short sections of good habitat for roundtail chub • Several native species observed in riffles
Wildlife	• Low to moderate habitat value
T & E Species	• One Yellow-Billed Cuckoo observed in over-wash • No Bald Eagle roosts

Legend:

- *10 Russian Olive and/or Tamarisk
- 11 Pinyon/Juniper
- 13 Conifer/Oak
- *14 Cottonwood
- *15 Cottonwood, Russian Olive, Tamarisk
- 16 Oak
- *18 Willow
- 20 Grass/Forb Upland
- *21 Grass/Forb Riparian
- 22 Desert Grassland/Sagebrush
- *23 Emergent Wetlands
- 27 Sagebrush/Cottonwood
- *30 River
- *31 Side Channels/Back Water
- 40 Residential, Industrial, and Roads
- 50 Irrigated Farmlands, Pasture/Grazing
- 60 Bare ground/Weeds
- *61 Gravel, Sand, and Mud Bars

* Riparian wetland classes

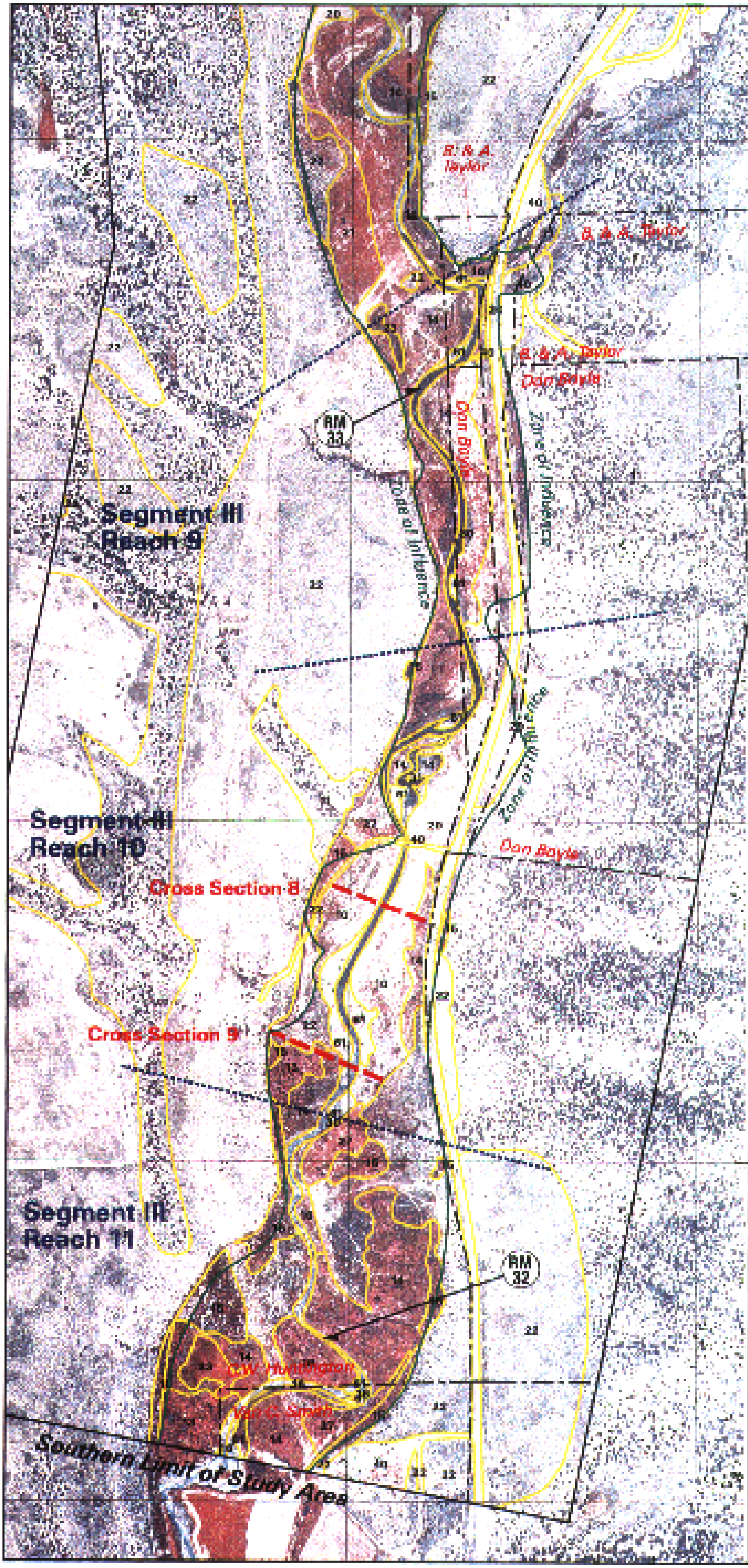
north

1 inch = 500 feet

0 250 500 1000 1500 2000

Figure 3-3. Existing conditions, Map 4.

REDUCED FROM ORIGINAL SIZE



MAP 6: Descriptive Legend Text Here

RESOURCE	DESCRIPTION
SEGMENT III, REACH 9	
Hydrology/ Geomorphology	• Q 1.5 = 460 cfs • Moderate to high bank erosion • Fair channel stability • [illegible] channel bar [illegible]
Vegetation	• [illegible] ac. total • Mostly Class #[illegible] ([illegible] ac.)
Fish	• Good [illegible] for [illegible] species [illegible] • [illegible] cover formed by [illegible] and [illegible] placed boulders
Wildlife	• Significant [illegible] • Low habitat values
T & E Species	• Limited SW Flycatcher habitat • No Bald Eagle nests
SEGMENT III, REACH 10	
Hydrology/ Geomorphology	• Q 1.5 = 460 cfs • Moderate to high bank erosion • Poor channel stability • Channel straightening and associated downstream effects
Vegetation	• 32 ac. total • Vegetation significantly altered
Fish	• Fair habitat for [illegible] • Swift, straight [illegible] channel with few pools [illegible]
Wildlife	• Poor habitat values
T & E Species	• Limited SW Flycatcher habitat • No Bald Eagle
SEGMENT III, REACH 11	
Hydrology/ Geomorphology	• Q 1.5 = 460 cfs • Low to moderate bank erosion • Good channel stability • Narrow channel between large [illegible] of low terrace and floodplain
Vegetation	• 25 ac. total • Mostly Class #14 (12 ac.)
Fish	• Good habitat for [illegible] • Deep pools, [illegible], overhanging bank vegetation
Wildlife	• Low to moderate habitat values
T & E Species	• Limited SW Flycatcher habitat • No Bald Eagle nests

Legend:

- *10 Russian Olive and/or Tamarisk
- 11 Pinyon/Juniper
- 12 Conifer/Oak
- *13 Cottonwood
- *14 Cottonwood, Russian Olive, Tamarisk
- 15 Oak
- *16 Willow
- 20 Grass/Forb Upland
- *21 Grass/Forb Riparian
- 22 Desert Grassland/Sagebrush
- *23 Emergent Wetlands
- 27 Sagebrush/Cottonwood
- *30 River
- *31 Side Channels/Back Water
- 40 Residential, Industrial, and Roads
- 60 Irrigated Farmlands, Pasture/Grazing
- 80 Bareground/Weeds
- *81 Gravel, Sand, and Mud Bars

* Riparian wetland classes.

North

Figure 3-3. Existing conditions, Map 5.

REDUCED FROM ORIGINAL SIZE

Both river hydrology and sedimentology change greatly in Segment III because of the influence of Long Hollow, which contributes about 40 mi^2 of watershed area to the La Plata River. In addition , Segment III has been significantly affected by large turn-of-the-20th Century floods and by human activities of stream alteration and highway construction. Approximately 4,000 feet of the La Plata River channel has been straightened, relocated, or otherwise modified below

Figure 3-4. — Reach of straightened and leveed channel in Segment III. Reach 10. Note that woody vegetation has established on the banks since completion of relocation activities.

its confluence with Long Hollow (Figure 3-4). In addition, river water is diverted into a small irrigation canal located on the western riverbank near the Long Hollow confluence. Leakage from the canal probably affects ground-water conditions and vegetation growth below it on the west side of the valley for most of the length of Segment III.

A total of approximately 78 acres occurs within the zone of influence in Segment III (Table 3-1, Figure 3-1). Channel straightening and reconstruction of the riverbank in this segment have artificially created large expanses of channel-bar subzones. This is reflected by the prevalence of cottonwood, tamarisk, Russian olive and willow communities that occupy these disturbed areas.

3.1.2. Fisheries

The La Plata River is known to support 11 species of fish, including five native species and six non-native species (Table 3-2) (Sublette et al. 1990, Miller et al. 1995). Native species include roundtail chub, flannelmouth sucker, bluehead sucker, speckled dace, and mottled sculpin. Non-native species include fathead minnow, red shiner, rainbow trout, brown trout, brook trout, and black bullhead.

Table 3-2. —Historic and present composition of fish species of the La Plata River in the vicinity of the study area.

Common Name	Scientific Name	Historic/Native Status	Present	
			Status	Percent By No.[1]
Family Cyprinidae				
Roundtail chub	*Gila robusta*	Native	Native	1.01
Speckled dace	*Rhinichthys osculus*	Native	Native	68.78
Fathead minnow	*Pimephales promelas*		Non-native	1.56
Red shiner	*Cyprinella lutrensis*		Non-native	<0.01
Colorado squawfish	*Ptychocheilus lucius*	Native	Extirpated	0.00
Family Catostomidae				
Flannelmouth sucker	*Catostomus latipinnis*	Native	Native	20.70
Bluehead sucker	*Catostomus discobolus*	Native	Native	7.38
Razorback sucker	*Xyrauchen texanus*	Native	Extirpated	0.00
Family Salmonidae				
Rainbow trout	*Onchorynchus mykiss*		Non-native	0.16
Brown trout	*Salmo trutta*		Non-native	0.13
Brook trout	*Salvelinus fontinalis*		Non-native	0.01
Family Cottidae				
Mottled sculpin	*Cottus bairdi*	Native	Native	0.25
Family Ictaluridae				
Black bullhead	*Ameiurus melas*		Non-native	0.01

[1] Miller et al. (1995)

Of the five native species, the roundtail chub is of concern in Colorado, where it is classified as a "sensitive species," and in New Mexico, where it is classified as "State Endangered Group II." Because the La Plata River is one of only five tributaries of the San Juan River with remnant populations of roundtail chub, protecting this species and its habitat is a primary objective in managing the La Plata River. The endangered Colorado squawfish, razorback sucker, humpback chub (*Gila cypha*), and bonytail (*Gila elegans*) do not occur in the La Plata River.

In March, July, and September of 1994, Miller et al. (1995) reported speckled dace (69% of total number), flannelmouth sucker (21%), bluehead sucker (7%), fathead minnow (*Pimephales promelas*, 1%), roundtail chub (1%), and mottled sculpin (<1%) as the most common species at six sampling stations of the La Plata River in New Mexico and Colorado (Table 3-2). Flows in New Mexico were intermittent because of irrigation withdrawals, and fish populations were typically dispersed with low numbers of individuals. While intermittent flows in the lower La Plata River may prevent exchange of native fish with the San Juan River, these flows and some concrete irrigation diversions also appear to be effective fish barriers to upstream movement of non-native fishes into areas occupied by native species near the Colorado-New Mexico state line. This may be a beneficial effect because certain non-native fishes are competitors and/or predators that can reduce or inhibit populations of native fish species.

Of the five native fish species, the roundtail chub has the most distinct habitat requirements for pool/eddy complexes with associated overhanging and lateral cover. Although roundtail chub in large rivers typically use large recirculating eddies and rocky shorelines (Valdez et al. 1982), the pool/eddy complex with overhanging cover has been identified as habitat most commonly used by the species in tributary streams, including Fossil Creek and Wet Beaver Creek, Arizona (Barrett and Maughan 1995); the Blacks Fork River, Wyoming (Richards and Holden 1981); the Dolores River, Colorado (Valdez et al. 1992); and the La Plata River, Colorado (Miller et al. 1995).

The habitat of flannelmouth suckers has not been described in small streams, although Miller et al. (1995) captured most adults in the La Plata River in pools and most juveniles in glides; in the larger Colorado and Gunnison Rivers, adults rest in deep pools and feed at the base of large cobble riffles (Valdez et al. 1982a). Miller et al. (1995) also found most adult bluehead suckers in pools and glides and most juveniles in glides and riffles. In the Colorado River in Grand Canyon, adult bluehead suckers use large cobble riffles and shallow pools, and annually ascend to spawn in small tributaries such as Bright Angel Creek and Kanab Creek (Otis 1994), Shinumo Creek (Allan 1993), and the Little Colorado River (Mattes 1993). Maddux and Kepner (1988) reported bluehead suckers spawning in small gravel beneath rock outcrops in Kanab Creek. The speckled dace is a small fish and tends to use shallow habitats; Miller et al. (1995) captured equal numbers of adults and juveniles in pools, glides and riffles of the La Plata River. These four native species typically spawn on cobble riffles in spring and early summer at water temperatures of 16 to 24° C. The eggs incubate less than 10 days and tiny larvae drift downstream into flooded bottomlands, backwaters, and quiet shoreline habitats where they rear as juveniles.

Mottled sculpin are not a major consideration in the study area because habitat for this species is more suitable upstream of the study area. This is evidenced by their low capture rates (0.25 percent of total captures) near the study area by Miller et al. (1995) (Table 3-2).

River reaches were evaluated to assess the longitudinal distribution of existing fish habitat and the potential for habitat improvement. The evaluation considered biologic, geomorphic, and hydrologic conditions as they affect fish habitat (See the fisheries and river channel technical appendices (Appendices C and D, respectively) for detailed descriptions of methods and results.) Habitat characteristics were described as:

- reaches where fish habitat was "excellent" (with few evident anthropogenic impacts) and worthy of protection or preservation management strategies; these reaches require minimal action and are valuable as reference reaches from which to compare the efficacy of restoration programs (Case 1995, Beschta 1997 cited in Kauffman et al. 1997),

- reaches where fish habitat was "good" and could be enhanced through changes in current land use practices or without large expenditure of money; these reaches require moderate planned action to improve the value of existing river reaches,

- reaches where fish habitat was "fair" and could be restored but at costs and with some risk of failure; these reaches require substantial investment in time and money to re-establish processes, functions, and related biological, chemical, and physical linkages between the aquatic and associated riparian ecosystems,

- reaches where fish habitat was "poor" and restoration is possible but very costly due to extreme conditions of alteration, degradation, or because land ownership and current management practices prevent corrective management strategies.

Existing fish habitat for each of the geomorphic reaches within Segments I, II, and III is described qualitatively in Figure 3-3 (Existing Conditions Map). Within Segment I, habitat in reaches 1, 4, and 6 was good for speckled dace and bluehead sucker because of a prevalence of swift runs and cobble/gravel riffles, but there were few pools for suckers and no pool/eddy complexes for roundtail chub. The habitat in reaches 2, 3, and 5 was only fair for these species, primarily because the stream channel was extensively braided, shallow, and exposed. The only section of good habitat was in reach 4 where the river flowed against the valley wall, exposing boulders and debris that created some pool/eddy complexes with overhanging cover.

Within Segment II, reach 7 was classified as good habitat for speckled dace and bluehead sucker, but fair for flannelmouth sucker, and reach 8 was fair habitat for all three species. Short sections within each reach were considered good habitat for roundtail chub where the river flowed against the valley wall, exposing boulders and overhanging cover as described for reach 4 above.

Within Segment III, the habitat in reach 9 was good for speckled dace, flannelmouth sucker, and roundtail chub with pools and lateral cover provided by concrete slabs and boulders placed by landowners. The channel in reach 10 was braided and habitat was fair for speckled dace. In reach 11, there were deep pools and large gravel riffles with some overhanging bank cover, as good habitat for flannelmouth suckers; in reach 12, habitat quality was only fair with some pools but little cover. Reach 13 was considered the best habitat for roundtail chub in this portion of the La Plata River. Pool/eddy complexes with overhanging cover were abundant and much of the riparian zone was in tact.

A further assessment of roundtail chub habitat in the La Plata River was completed for each of the subject properties. Roundtail chub habitat was identified and described based on past capture locations. Past collections (Miller et al. 1995) showed that a pool/eddy complex with overhanging, instream, or lateral bank cover best described the habitat used by juvenile and adult roundtail chub. For the purposes of this mitigation assessment, this habitat complex was termed a "fish habitat unit" (FHU), and it was assumed that this habitat complex was selected by roundtail chub in the study area.

The greatest concentration of roundtail chubs is known to occur at the Baird Property, which is approximately 2.5 miles downstream of the study area (Figure 2-2). The Baird Property encompasses a relatively unperturbed portion of the river corridor and supports mature riparian-wetland vegetation along its riverbanks. Habitat features within the Baird Property were used as a basis to assess roundtail chub habitat within the study area properties. Based on the features associated with FHUs in the Baird Property, the study area properties were surveyed and the number of FHUs per mile of stream was determined for each property. This portion of the assessment provided a measure of the amount and distribution of existing fish habitat.

3.1.3 Wildlife

The study area supports a relatively diverse mosaic of upland, riparian-wetland, and riverine habitats for a variety of wildlife guilds, including: big game, small mammals, raptors, waterfowl and shorebirds, neotropical migratory birds, game birds, reptiles and amphibians. Usually, the habitats of the river corridor support a greater amount of wildlife use compared with the adjacent, semi-arid uplands of sagebrush, pinyon pine, and juniper. However, the value of these habitats can vary greatly along the river corridor depending on past and current land uses, proximity to human settlements, and the amount of water diverted from the river.

Overall, habitats in Segments I and II are in the best condition, relative to the study area, because they are the farthest removed from human development and settlement. The primary factor limiting wildlife values in these segments is the intensity of livestock grazing, which varies depending on land ownership as discussed later in this chapter. Segment III tends to support the least amount of wildlife values due to the obliteration of habitats that has resulted from channel straightening, road construction, and irrigation diversions. Also, habitats in Segment III are close to human settlements and disturbances caused by highway traffic.

3.1.4 Threatened and Endangered Species

Bald eagles are not known to nest within the study area; however, communal roost sites for wintering bald eagles are known to occur. Communal roost sites consist of mature but isolated cottonwood trees that are usually on the low terrace subzone (Figure 3-5). Reclamation has completed surveys for bald eagles during the winters of 1993-94, 94-95, 95-96, and 96-97. During this 4-year period, three separate communal roost sites were observed in Segment I

Figure 3-5. —Example of isolated mature cottonwood tree on low terrace subzone. Note extent of pasture conversion within the river corridor.

(reaches 2, 4, and 6) and one site was observed in Segment II, reach 7 (Figure 3-3). Wintering bald eagles were observed consistently using these roost sites between the months of December and March.

Younger stands of cottonwoods and dense thickets of willows and tamarisk on the floodplain and channel bar subzones provide potential habitat for the southwestern willow flycatcher, which is a neotropical migrant. Surveys for southwestern willow flycatchers were conducted for the study area on May 30, June 14, and July 3, 1997, according to the protocols established by the Service, which included both field observations and vocalizations using the playback method (i.e., using a recording of the species distinctive call to elicit a response) (Sogge et al. 1997). The first survey period resulted in responses from five separate willow flycatchers, one in Segment III and four in Segment II (Rhea 1997). Subsequent surveys resulted in no responses or observations. Because no other responses were elicited during the second and third surveys, it is not possible to

determine whether the willow flycatchers were of the southwestern subspecies, or whether the study area is used by breeding pairs. It is assumed that the birds were using the study area as a migratory corridor.

Breeding pairs of southwestern willow flycatchers are known to nest along the San Juan River to the south and the Dolores River to the north. Rhea (1997) speculated that although nesting willow flycatchers were not identified within the study area in 1997, the existing riparian-wetland vegetation along certain reaches of the river corridor provides suitable nesting habitat for this species. Nevertheless, at this time it is only known that willow flycatchers use the study area as a migratory corridor.

Within the study area, habitat is limited for both bald eagle and southwestern willow flycatcher. Grazing practices throughout the study area limit the development of multi-storied shrub communities (particularly willows), which is essential for nesting willow flycatchers. Similarly, grazing has kept cottonwood stands from reaching maturity. Subsequently, mature cottonwood stands throughout the study area are usually decadent. Apparently, several trees either deadfall or are cut each year. Each remaining tree becomes increasingly important for bald eagle use because there is no suitable age-class to replace these trees.

A mature peregrine falcon was observed in Segment I, reach 4 during the Spring of 1997 (Rhea 1997). The falcon was perched in a cottonwood tree. It is assumed that the falcon was using the river corridor for hunting because suitable nesting habitat is marginal at best within the study area. Peregrine falcon typically nest on high cliffs. To date, loggerhead shrike have not been recorded in the study area.

3.2 HUNTINGTON PROPERTIES

3.2.1 Riparian-Wetlands

A total of approximately 279 acres of plant communities and cover classes were identified within the zone of influence at the Huntington Properties (Table 3-3). The northern parcel is in Segment I, reaches 1, 2, 3, and 4. The northern parcel contains the greatest acreage of riparian-wetlands and is the least disturbed of the three parcels as is shown by the presence of about 35 acres of willow communities, compared with 24 acres of mixed cottonwood, Russian olive, and tamarisk communities, which tend to indicate past disturbances. Both the central and southern parcels have greater amounts of the mixed cottonwood, Russian olive, and tamarisk compared with willow. However, the northern parcel is not pristine. The 33 acres of grass/forb riparian communities in the northern parcel appear to have been native willow and cottonwood communities that were converted to livestock pasture. Areas converted to livestock pasture lack deep-rooted trees and shrubs to help stabilize riverbanks. Subsequently, riverbanks bordering pastures have accelerated erosion causing channel widening and sedimentation (Figure 3-6). In addition, grazing pressure prevents the establishment of mature cottonwood and willow stands at

Table 3-3. —Summary of Plant Communities and cover classes within the zone of influence at the Huntington Properties.

Vegetation Class		Huntington Properties			
		Northern Parcel	Central Parcel	Southern Parcel	TOTALS
10	Russian Olive and/or Tamarisk [1]	0.0	0.0	8.0	**8.0**
11	Pinyon / Juniper	0.5	0.0	1.5	**2.0**
13	Cottonwood [1]	0.0	0.5	3.0	**3.5**
14	Cottonwood, Russian Olive, Tamarisk [1]	24.0	10.5	34.0	**68.5**
15	Oak	0.5	0.0	4.5	**5.0**
16	Willow [1]	35.0	0.5	2.5	**38.0**
20	Grass / Forb Upland	26.0	3.0	17.5	**46.5**
21	Grass / Forb Riparian [1]	32.5	5.0	3.0	**40.5**
22	Desert Grassland / Sagebrush	7.0	6.0	14.5	**27.5**
23	Emergent Wetlands [1]	0.0	6.5	1.5	**8.0**
27	Sagebrush / Cottonwood	2.0	1.5	1.5	**5.0**
30	River [1]	7.5	3.0	6.0	**16.5**
31	Side Channels / Back Water	0.5	0.0	0.5	**1.0**
40	Residential, Industrial, and Roads	0.0	0.0	3.5	**3.5**
60	Bareground / Weeds	0.5	0.0	0.0	**0.5**
61	Gravel, Sand, and Mud Bars [1]	1.0	0.5	3.0	**4.5**
TOTALS		**137.0**	**37.0**	**104.5**	**278.5**

[1] Riparian-wetland classes

certain high-use locations. These conditions are also common on central and southern parcels, and are confounded by summertime flow reductions caused by irrigation diversions upstream of the study area.

The central parcel is also in Segment I and rests mostly in reach 6. It is bordered to the north and south by SUIT lands. The central parcel has been grazed more heavily than the northern parcel and is dominated by cottonwood, Russian olive, and tamarisk communities (Table 3-3). An approximately 6-acre emergent wetland complex occurs in the northern area of this parcel. An alluvial fan greatly constricts the zone of influence and thereby limits the presence of riparian-wetland plant communities in the southern area of the parcel (Figure 3-3).

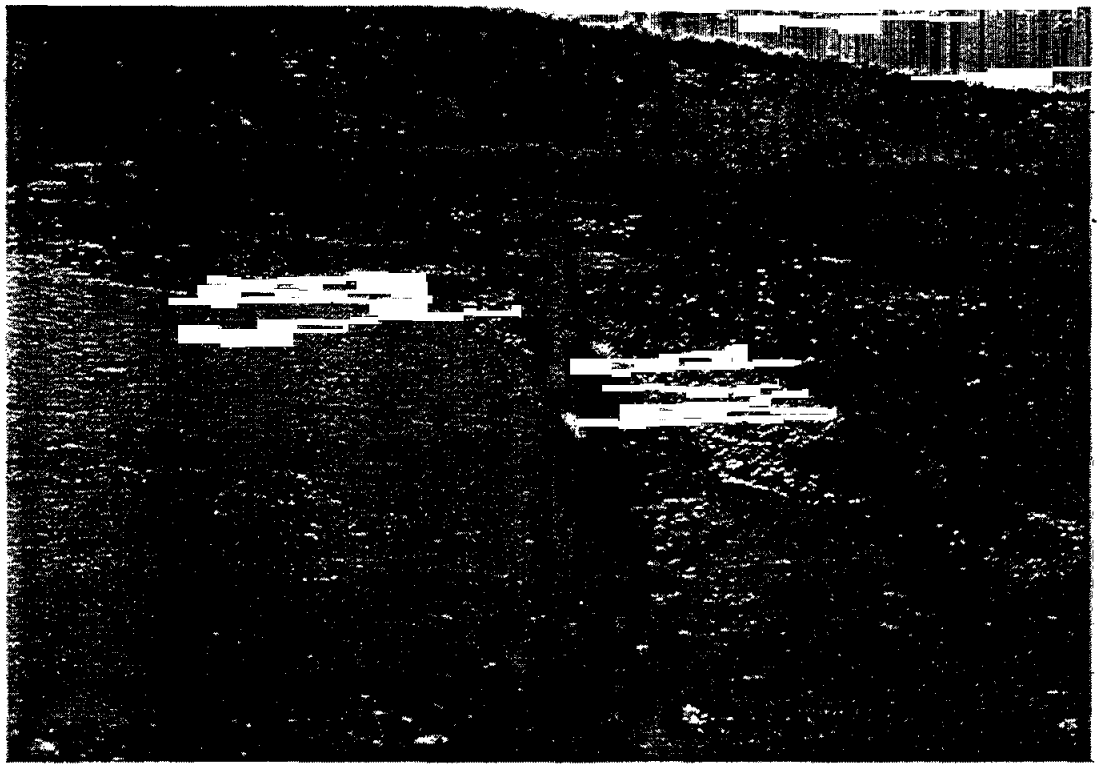


Figure 3-6. —Channel widening and bank erosion in Reach 2. Floodplain and terraces on the right have had vegetation converted to pastureland. To the left background, willows are being recruited on the channel-bar level.

The southern parcel is located in the lower portion of Segment II and in Segment III, reaches 8, 9, 10, and 11. Most of the area in reach 8 appears to have been moderately grazed and its plant communities are in relatively good condition. Cottonwood and willow recruitment are evident by the presence of multiple age/size classes at several locations; however, tamarisk and Russian olive are prevalent throughout the reach. Reaches 9, 10, and 11 have been significantly perturbed by both livestock grazing, irrigation diversions, and alteration of the river channel and floodplain. As a result, a significant amount of native vegetation has been removed and replaced with non-native tamarisk and Russian olive. In addition, a significant portion of the zone of influence has been "dried" resulting in the establishment of upland vegetation at locations that historically supported riparian-wetland vegetation.

3.2.2 Fisheries

The number of FHUs per mile of stream on the Huntington Property varied from a low of 2.4 within the northern parcel to 8.8 within the central parcel (Table 3-4), as compared with 42.0 FHUs per mile of stream on the Baird Property, where the majority of roundtail chub were found by previous investigators (Miller et al. 1995). A small portion of reach 4 (RM 36.4-36.2) in the northern Huntington parcel and a small portion of reach 7 (RM 34.8-34.6) in the central Huntington parcel were rated as "good" roundtail chub habitat (Figure 3-3).

Table 3-4. —Comparison of existing native fish habitat for the Huntington Properties.

Property Parcel	River Miles	Stream Length (miles)	FHUs per Mile (length in meters)	Eroding Banks per Mile (length in meters)	Native Fish Habitat Quality	
					Roundtail Chub	Other Native Species[1]
Huntington (Northern Parcel)	38.6-36.1	2.1	2.4 (273)	4.6 (890)	poor - fair	good
Huntington (Central Parcel)	35.4-34.6	0.8	8.8 (190)	10.0 (312)	fair	good
Huntington (Southern Parcel)	33.9-31.9	1.5	4.0 (146)	10.7 (765)	poor	fair - good

[1] includes flannelmouth sucker, bluehead sucker, speckled dace

3.2.3. Wildlife

Wildlife habitat on the Huntington parcels is relatively diverse. Small cliffs and canyons separate sagebrush shrublands and pinyon/juniper woodlands from the riparian area along La Plata River corridor. Stream channelization, irrigation diversions, and heavy livestock grazing have degraded wildlife habitats to some degree; however, initial field checks show the area has considerable potential for multiple wildlife values. This is consistent with other areas of southwestern Colorado where riparian areas support a disproportionately high species diversity within semiarid landscapes.

Habitat values vary within each Huntington parcel depending on the degree of disturbance, natural topography, and other factors. The relative isolation due to the private ownership and location of the northern, central, and most of the southern parcel away from major roads and human settlement add greatly to the value of the property. Invasion of the area by exotic species, for example tamarisk and Russian olive, is an existing problem although tamarisk is not as extensive as could be expected.

Resident mule deer use the parcels, and to some extent the area supports migrating animals in the winter. Major mule deer winter areas, however, occur to the north, northeast, and west of the Huntington parcels. While not normally considered elk winter range, the area is reported to occasionally have elk in the fall, winter, and spring. Elk winter concentration areas occur to the north of the property, and lands east, all the way to the Animas River, are used during winter months. Small mammals include the desert cottontail, long-tailed weasel, badger, striped skunk, beaver, and muskrat. Bird use of the property includes a long list of neotropical migrants, waterfowl, shorebirds, raptors, and upland game species such as Gambel's quail.

Currently, several factors limit wildlife values of the Huntington parcels. Livestock grazing management and perhaps upstream water diversions limit the full development of cottonwood and willow habitats. There is probably some competition for forage between domestic animals and wildlife. Introduced non-native plants, especially tamarisk, spotted knapweed, and thistle, compete with the more valuable native species and may increasingly reduce wildlife values. Presently, more desirable winter range for deer and elk occurs in the vicinity; however, rapid development may alter this significantly in the future. The potential value for significant use by big game animals during winter is now limited by this and by the relative lack of important browse species. Waterfowl and shorebird use is probably limited by reduced river flows, channel straightening, lack of brood habitat, and to a lesser extent lack of nesting habitat.

3.2.4. Threatened and Endangered Species

Two communal roost sites for wintering bald eagle occur in the northern Huntington parcel in reaches 2 and 4, and two communal roost sites occur in the central Huntington parcel, reaches 6 and 7 (Figure 3-3). No roost sites are known to occur in the southern parcel. Presumably, potential roosting habitat is limited in the southern parcel due to a lack of mature, but isolated, cottonwood trees removed from human disturbances.

One willow flycatcher was observed by vocalization near the upper portion of reach eight in the southern Huntington parcel. Potential flycatcher habitat in the northern and central parcels is limited by grazing effects that curtail the development of mature multi-storied riparian-wetland shrub communities.

3.3 SOUTHERN UTE INDIAN TRIBE PROPERTIES

3.3.1 Riparian-Wetlands

A total of approximately 89 acres of plant communities and cover classes were identified within the zone of influence at the SUIT lands (Table 3-5). The northern SUIT parcel is found in Segment I, reaches 4 and 5. The northern parcel has been managed intensively for livestock grazing. Mature riparian tree and shrub species, most notably tamarisk, have been removed in an attempt to increase available pasture (Figure 3-7). The removal of deep-rooted woody vegetation may have contributed to channel braiding in reach 4 (Figure 3-3). Apparently, the continual disturbance caused by intensive grazing and channel braiding has created conditions that select for the establishment of tamarisk. This condition is also prevalent in reach 5 in the area where an unimproved road provides vehicular access to the eastern riverbank.

Table 3-5. —Summary of Plant Communities and cover classes within the SUIT Lands.

Vegetation Class		SUIT Lands Northern Parcel	SUIT Lands Southern Parcel	SUIT Lands TOTALS
10	Russian Olive and/or Tamarisk [1]	0.0	1.0	**1.0**
11	Pinyon / Juniper	0.0	0.0	**0.0**
13	Cottonwood [1]	0.0	0.0	**0.0**
14	Cottonwood, Russian Olive, Tamarisk [1]	15.5	5.5	**21.0**
15	Oak	0.5	0.0	**0.5**
16	Willow [1]	5.0	0.5	**5.5**
20	Grass / Forb Upland	1.0	5.0	**6.0**
21	Grass / Forb Riparian [1]	8.0	4.0	**12.0**
22	Desert Grassland / Sagebrush	30.0	1.0	**31.0**
23	Emergent Wetlands [1]	0.0	2.0	**2.0**
27	Sagebrush / Cottonwood	1.0	1.0	**2.0**
30	River [1]	3.5	1.5	**5.0**
31	Side Channels / Back Water	0.0	0.0	**0.0**
40	Residential, Industrial, and Roads	0.0	0.0	**0.0**
60	Bareground / Weeds	0.0	0.0	**0.0**
61	Gravel, Sand, and Mud Bars [1]	2.5	0.5	**3.0**
TOTALS		**67.0**	**22.0**	**89.0**

[1] Riparian-wetland classes

The southern SUIT parcel is located Segment II, reaches 7 and 8 (Figure 3-3). The southern parcel is bordered by privately owned lands to the east and is less accessible than the northern parcel. As a result, it appears that this parcel has less grazing pressure, although livestock are present. The overall condition of riparian-wetland plant communities in the southern SUIT parcel is fair. The southern parcel also supports a greater diversity of riparian-wetland plant communities, including an approximately 2-acre emergent wetland complex in reach 7.

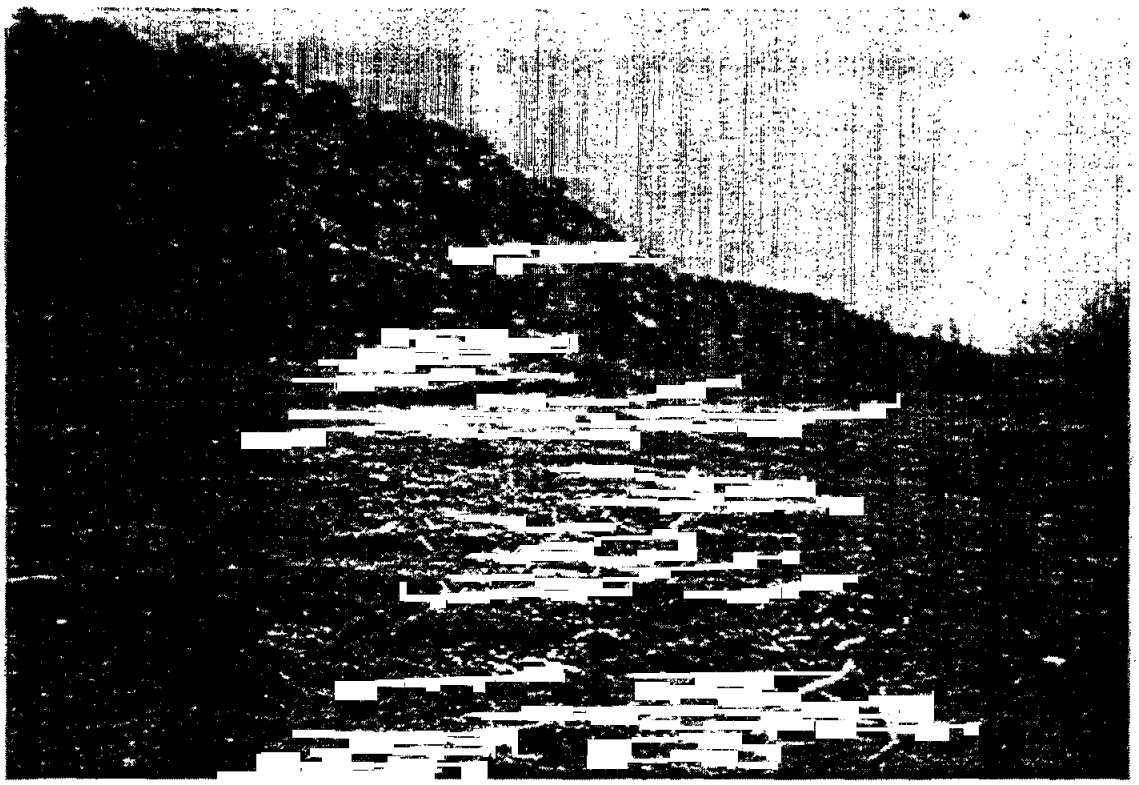


Figure 3-7. —Example of removal of woody riparian-wetland vegetation to increase livestock pasture.

3.3.2 Fisheries

A total of about 1.2 river miles occurs within both the SUIT parcels. The number of FHUs per river mile was 3.3, as compared with 42.0 FHUs per river mile on the Baird Property. One short section within the northern parcel, Segment 1, reach 4 (RM 36.4-36.2) was rated as "good" roundtail chub habitat (Figure 3-3). Similar to the habitat on the Huntington parcels, it was formed by localized bank erosion against the western valley wall that exposed large sandstone boulders. The exposed boulders provide lateral and overhead cover, creating several contiguous pool/eddy complexes. Also, like the Huntington parcels, large single trees or small stands of mature birch, cottonwood, tamarisk, or Russian olive trees provided isolated habitat complexes (Figure 3-8).

About 5 FHUs per river mile were identified in the northern SUIT parcel (Table 3-6). In comparison, no FHUs were identified in the southern parcel, although a very short section of reach 7 (RM 34.8-34.6), where the river abuts the western valley wall, has habitat potential.

3.3.3 Wildlife

The description of the general wildlife conditions and habitat values for the Huntington parcels are, more-or-less, the same for the SUIT parcels.

Figure 3-8. —Example of a single fish habitat unit created by a fallen birch tree in reach 5.

Table 3-6. —*Comparison of existing native fish habitat for SUIT lands.*

Property Parcel	River Miles	Stream Length (miles)	FHUs per Mile (length in meters)	Eroding Banks per Mile (length in meters)	Native Fish Habitat Quality	
					Roundtail Chub	Other Native Species[1]
SUIT Lands (Northern Parcel)	36.5-35.4	0.8	5.0 (75)	11.3 (455)	fair	good
SUIT Lands (Southern Parcel)	34.6-33.9	0.4	0 (0)	15.0 (275)	poor	fair - good

[1] includes flannelmouth sucker, bluehead sucker, speckled dace

3.3.4 Threatened and Endangered Species

No communal roost sites for wintering bald eagle are known to occur within the SUIT lands. No willow flycatchers were observed on SUIT lands. As with the Huntington Property, grazing effects appear to be the primary factor limiting the establishment of multi-storied riparian-wetland shrub communities preferred by willow flycatchers.

3.4 TAYLOR PROPERTIES

As discussed previously, two separate Taylor properties occur within the study area and are under separate ownership. The Myron and Bob Taylor property is the larger of the two properties and is located above the Long Hollow confluence in Segment II, reaches 7 and 8. The Bob and Anna Taylor property is located mostly in Segment III, reach 9 where Long Hollow confluences with the La Plata River (Figure 2-2).

3.4.1 Riparian-Wetlands

The M & B Taylor property encompasses a total of approximately 29.5 acres of plant communities and cover classes within the zone of influence (Table 3-7). More than 50 percent of this acreage (approximately 16.5 acres) is of the cottonwood, Russian olive, and tamarisk plant community type, and reflects both past and present grazing practices. There is also about 5 acres of the willow community type, most of which consists of a large willow stand at the boundary of reach 7 and 8 (Figure 3-3). It appears that recent grazing practices have been low to moderate because these woody riparian-wetland shrub communities tend to support robust vegetation, although mature streamside vegetation is lacking, suggesting there was intensive grazing during the recent past. Apparently, little recent effort has been made to convert woody vegetation to livestock pasture.

The B & A Taylor property only encompasses about 1.5 acres within the zone of influence. This acreage is made entirely of cottonwood, Russian olive, tamarisk, and river channel (Table 3-7). The property has been disturbed extensively during recent decades in efforts to channelize the river its Long Hollow confluence and to control the flood prone area. Existing plant communities are in poor condition and support little vegetative cover.

3.4.2 Fisheries

The fishery assessments for the Taylor properties were pooled together because of the extremely short section of river channel in the B & A Taylor property and its highly altered condition. The number of FHUs per mile of stream on the Taylor Properties (0.7 mile) was 2.9, as compared with 42.0 FHUs per mile of stream on the Baird Property (Table 3-8). Fish habitat within the Taylor Properties was generally in poor condition with little mature bank vegetation to provide cover.

Table 3-7. —Summary of Plant Communities and cover classes within the Taylor Properties.

Vegetation Class		Taylor Properties		
		M&B Taylor Property	B&A Taylor Property	TOTALS
10	Russian Olive and/or Tamarisk [1]	0.0	0.0	**0.0**
11	Pinyon / Juniper	0.0	0.0	**0.0**
13	Cottonwood [1]	0.0	0.0	**0.0**
14	Cottonwood, Russian Olive, Tamarisk [1]	16.5	1.0	**17.5**
15	Oak	0.5	0.0	**0.5**
16	Willow [1]	5.0	0.0	**5.0**
20	Grass / Forb Upland	1.5	0.0	**1.5**
21	Grass / Forb Riparian [1]	0.5	0.0	**0.5**
22	Desert Grassland / Sagebrush	3.0	0.0	**3.0**
23	Emergent Wetlands [1]	0.0	0.0	**0.0**
27	Sagebrush / Cottonwood	0.0	0.0	**0.0**
30	River [1]	2.5	0.5	**3.0**
31	Side Channels / Back Water	0.0	0.0	**0.0**
40	Residential, Industrial, and Roads	0.0	0.0	**0.0**
60	Bareground / Weeds	0.0	0.0	**0.0**
61	Gravel, Sand, and Mud Bars [1]	0.0	0.0	**0.0**
TOTALS		29.5	1.5	**31.0**

[1] Riparian-wetland classes

The B & A Taylor property is unique in that it encompasses the present location of Long Hollow's confluence with the La Plata River. Seasonal aggregations of flannelmouth and bluehead suckers to the Long Hollow confluence have been observed. The purpose of these seasonal aggregations is not known at this time.

Table 3-8. —Existing native fish habitat for the M. & B. and B. & A. Taylor Properties.

Property Parcel	River Miles	Stream Length (miles)	FHUs per Mile (length in meters)	Eroding Banks per Mile (length in meters)	Native Fish Habitat Quality	
					Roundtail Chub	Other Native Species[1]
Taylor Properties	34.3-33.0	0.7	2.9 (35)	9.0 (80)	poor	fair

[1] includes flannelmouth sucker, bluehead sucker, speckled dace

3.4.3 Wildlife

The M & B Taylor property encompasses nearly 30 acres of river corridor consisting mostly of riparian-wetland shrub communities of mixed cottonwood, Russian olive, and tamarisk (16.5 acres) and willow (5.0 acres). Compared with the Huntington and SUIT parcels, this property appears to have sustained less grazing pressure in the recent past, although there is a lack of mature streamside vegetation. As a result, these plant communities presently support greater structural diversity, thereby improving habitat values for particular wildlife guilds, especially for neotropical migratory birds (Rhea 1997). The relative isolation of this property from human settlement adds to its wildlife values.

The B & A Taylor property is small and supports relatively little vegetative cover due to its history of human land use. It is next to Highway 140, a frequently traveled road. Subsequently, this property presently supports very little wildlife value (Figure 3-9).

3.4.4 Threatened and Endangered Species

No communal roost sites for wintering bald eagle are known to occur within the Taylor properties. Willow flycatchers were observed by vocalization on the M & B Taylor property in reach 7. These observations occurred in habitats that appear to have been largely inaccessible to livestock.

3.5 BOYLE PROPERTY

The Boyle Property is located in Segment III, reaches 9 and 10. The property has been greatly altered by past and ongoing earthmoving for river channelization and floodplain management. Subsequently, both the riverine and riparian-wetland environments have been significantly disturbed, with various parts of the property in differing stages of recovery.

Figure 3-9. —Looking down the La Plata River valley in Segment III, reach 9. Highway bridge at left crosses Long Hollow flowing from the east.

3.5.1 Riparian-Wetlands

The Boyle Property encompasses a total of about 7.5 acres of plant communities and cover classes within its zone of influence (Table 3-9). The vegetation acreage is entirely cottonwood, Russian olive, and tamarisk and grass/forb upland plant communities. Both plant communities are established on disturbed areas and support little vegetative cover. The grass/forb upland community probably occurs in an area that was riparian-wetlands prior to human disturbance.

3.5.2 Fisheries

The Boyle property contains two very small sections of the La Plata River that has been greatly altered. There is very little habitat value for most native fish and virtually no value for roundtail chub.

3.5.3 Wildlife

Similar to the B & A property in its past land use and proximity to Highway 140, the Boyle property supports very little habitat values for wildlife in its present condition.

Table 3-9. —Summary of plant communities and cover classes within the Boyle Property.

Boyle Property		
Vegetation Class		TOTALS
10	Russian Olive and/or Tamarisk [1]	0.0
11	Pinyon / Juniper	0.0
13	Cottonwood [1]	0.0
14	Cottonwood, Russian Olive, Tamarisk [1]	3.5
15	Oak	0.0
16	Willow [1]	0.0
20	Grass / Forb Upland	3.0
21	Grass / Forb Riparian [1]	0.0
22	Desert Grassland / Sagebrush	0.0
23	Emergent Wetlands [1]	0.0
27	Sagebrush / Cottonwood	0.0
30	River [1]	1.0
31	Side Channels / Back Water	0.0
40	Residential, Industrial, and Roads	0.0
60	Bareground / Weeds	0.0
61	Gravel, Sand, and Mud Bars [1]	0.0
TOTALS		7.5

[1] Riparian-wetland classes

3.5.4 Threatened and Endangered Species

No communal roost sites for wintering bald eagle occur on the Boyle property because there are no mature and isolated trees present, and because the property is too close to Highway 140. There is virtually no habitat available for southwestern willow flycatcher.

3.6 SUMMARY OF EXISTING CONDITIONS

The riparian-wetland ecosystem of the La Plata River corridor supports many biological and physical functions. It creates a diverse mosaic of riparian-wetland plant communities not found on the surrounding tablelands. Although these plant communities are very limited in extent

within the lower watershed, they support numerous fish and wildlife habitat values that would otherwise be absent from the landscape. For certain species, such as the federally listed southwestern willow flycatcher, the riparian-wetland environment of the river corridor may support the only habitat available to them within the entire landscape. Thus, the riparian-wetland ecosystem of the river corridor is a vitally important component for maintaining biotic diversity within the semi-arid landscape of the lower watershed. In addition, the presence of riparian-wetland vegetation improves the flood attenuation and desynchronization capacity of the river's floodplain and helps remove sediment and nutrients from flood waters and overland runoff.

However, within the study area, existing riparian-wetland habitats along the river corridor have been perturbed by: removal of vegetation and conversion to pasture, intensive livestock grazing, earthmoving (i.e., dredging and/or placement of fill material) associated with channel and floodplain alterations, and by other human development. Virtually all of the areas mapped as grass/forb riparian appear to have been native cottonwood and/or willow communities converted to agricultural land use, mostly as livestock pasture. In addition, summertime diversions from upstream irrigation greatly diminish river flows and, presumably, the amount of surface and ground water available to support riparian-wetland vegetation. These hydrological reductions, in conjunction with the channel downcutting and widening that occurred around the turn of the 20th Century, may have contributed significantly toward the conversion of riparian-wetlands on the low terrace subzone to mostly upland plant communities.

These changes have also greatly affected the stability of the river channel, presence of streamside vegetation, and habitat potential for native fish. Presently, the best roundtail chub fishery habitats within the study area are at a few locations where the river abuts the western valley wall, exposing large rocks and boulders for cover. In general, the remainder of the river supports too much swift riffles and runs and too few pools with overhanging cover. This condition is mostly due to an overwidening of the river channel that probably has been accelerated by intensive grazing and the conversion of native vegetation to pasture, which lacks the deep root structure to help stabilize riverbanks. The removal of native vegetation, especially cottonwoods and willows, has also resulted in a tremendous reduction in available habitat to bald eagle and southwestern willow flycatcher.

Of the 31 FHUs identified within the subject properties of the study area, 32 percent, 26 percent, and 16 percent of the units were formed by boulders, debris, and tamarisk, respectively. Birch trees, willows, and concrete slabs each formed 6 percent of the FHUs, and box elder and Russian olive each formed 4 percent of the FHUs. In contrast, 62 percent of the 21 FHUs identified in the Baird Property were formed by squawbush, 18 percent by box elder, 10 percent by debris, and 5 percent each by tamarisk and boulders. The Baird Property, where roundtail chub habitat was excellent, had mature riparian-wetland plant communities with large trees and shrubs occurring along the riverbanks.

Within the study area, the quality of roundtail chub habitat varied greatly. The central Huntington parcel had the most roundtail FHUs per river mile (8.8) whereas the southern SUIT

Table 3-10. —Comparison of existing native fish habitat along the La Plata River corridor by property ownership.

Property Parcel	River Miles	Stream Length (miles)	FHUs per Mile (length in meters)	Eroding Banks per Mile (length in meters)	Native Fish Habitat Quality	
					Roundtail Chub	Other Native Species[1]
Huntington (Northern Parcel)	38.6-36.1	2.1	2.4 (273)	4.6 (890)	poor - fair	good
Huntington (Central Parcel)	35.4-34.6	0.8	8.8 (190)	10.0 (312)	fair	good
Huntington (Southern Parcel)	33.9-31.9	1.5	4.0 (146)	10.7 (765)	poor	fair - good
SUIT Lands (Northern Parcel)	36.5-35.4	0.8	5.0 (75)	11.3 (455)	fair	good
SUIT Lands (Southern Parcel)	34.6-33.9	0.4	0 (0)	15.0 (275)	poor	fair - good
Taylor Properties	34.3-33.0	0.7	2.9 (35)	9.0 (80)	poor	fair
Baird Property	30.2-28.8	1.4	42.0 (1520)	14.0 (310)	good-excellent	good

[1] includes flannelmouth sucker, bluehead sucker, speckled dace

parcel had the least (0.0) (Table 3-10). However, all properties had poor roundtail chub habitat when compared to the Baird property (42 FHUs per river mile) (Table 3-10).

The survey of the Baird Property revealed that the factor limiting the formation of good roundtail chub habitat complexes in the study area was the absence of large trees with root wads and overhanging branches that deflect river currents, thereby forming scour pools and eddies. Instead, boulders (which were not found in the valley floor) provided the only habitat where the channel flowed against the lateral valley walls. In contrast, the stream through the Baird Property was classified as "excellent" roundtail chub habitat within a 0.5-mile reach, where there was an abundance of pool/eddy complexes, gravel riffles, overhanging bank cover, and mature streamside vegetation, such as large live trees and standing or fallen tree trunks and associated root wads.

The three parcels of the Huntington Property contain the greatest amount of acreage within the river corridor study area (Table 3-11). All of the northern and central Huntington parcels, SUIT lands, and most of the M & B Taylor property have been moderately-to-severely impacted by livestock grazing and pasture conversions. These areas have a high potential for the natural recovery of riparian-wetland, fishery, and wildlife resources if livestock grazing is curtailed and

Table 3-11.—Comparison of plant communities and cover classes within the La Plata River's zone of influence by property ownership.

Vegetation Class		Huntington Properties	SUIT Lands	M&B Taylor Property	B&A Taylor Property	Boyle Property	TOTALS
10	Russian Olive and/or Tamarisk [1]	8.0	1.0	0.0	0.0	0.0	**9.0**
11	Pinyon / Juniper	2.0	0.0	0.0	0.0	0.0	**2.0**
13	Cottonwood [1]	3.5	0.0	0.0	0.0	0.0	**3.5**
14	Cottonwood, *Russian Olive*, Tamarisk [1]	68.5	21.0	16.5	1.0	3.5	**110.5**
15	Oak	5.0	0.5	0.5	0.0	0.0	**6.0**
16	Willow [1]	38.0	5.0	5.0	0.0	0.0	**48.0**
20	Grass / Forb Upland	46.5	5.5	1.5	0.0	3.0	**56.5**
21	Grass / Forb Riparian [1]	40.5	12.0	0.5	0.0	0.0	**53.0**
22	Desert Grassland/ Sagebrush	27.5	31.0	3.0	0.0	0.0	**61.5**
23	Emergent Wetlands [1]	8.0	2.0	0.0	0.0	0.0	**10.0**
27	Sagebrush/ Cottonwood	5.0	2.0	0.0	0.0	0.0	**7.0**
30	River [1]	16.5	5.0	2.5	0.5	1.0	**25.5**
31	Side Channels/ Back Water	1.0	0.0	0.0	0.0	0.0	**1.0**
40	Residential, Industrial, and Roads	3.5	0.0	0.0	0.0	0.0	**3.5**
60	Bareground / Weeds	0.5	0.0	0.0	0.0	0.0	**0.5**
61	Gravel, Sand, and Mud Bars [1]	4.5	3.0	0.0	0.0	0.0	**7.5**
TOTALS		**278.5**	**88.0**	**29.5**	**1.5**	**7.5**	**405.5**

[1] Riparian-wetland classes

instream flows are improved. In addition to livestock impacts, riparian-wetland conditions of the southern Huntington parcel, B & A Taylor property, and Boyle property have been significantly altered by earthmoving impacts. These properties would require a greater amount of human intervention to recover channel stability, riparian-wetland plant communities, and fish and wildlife habitat values.